

**ABSTRACT**

Spatial processing of wideband and multicarrier signals in a multipath environment is achieved by exploiting frequency diversity. The amplitude-versus-frequency profile of received signals is affected by multipath fading. Spatial separation of the transmitters results in transmitted signals undergoing different fades. Providing the transmitted signals with unique amplitude-versus-frequency profiles ensures that received signals have different profiles, even when multipath fading is negligible. A diversity receiver separates the received signals into frequency components and spatially demultiplexes the interfering signals in each of the frequency components.

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